

REMARKS/ARGUMENTS

In paragraph 4 of the Office action, claims 1, 9-11, 19-20, and 26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Hanounik et al. "Linear-time Matrix Transpose Algorithms Using Vector Register File with Diagonal Registers," 2001 (hereinafter referred to as Hanounik). The copy of the article provided to the undersigned is undated, but the subject matter appears similar to that of U.S. Patent Publication No. 2003/0084081 published May 1, 2003, and filed on October 27, 2001. The applicant will address this rejection on the merits, without admitting that the article is prior art.

Independent claim 1 has been amended to recite that the processing elements are arranged in an NxN array and that data is shifted N-1 times along a plurality of diagonals until each processing element in each diagonal has received the data held by every other processing element in that diagonal. Claims 11 and 26 have been amended in a similar manner.

The step-by-step progression of data along diagonals as a result of pairs of shifts and the selection of data is illustrated in Figures 17A-17H and described in paragraph [0084] of the instant application. If data is being shifted diagonally up and to the right, as data shifts off the top or right of the array, it reappears at the bottom or left of the array. That is illustrated by looking at the data which begins at position h2 in Figure 16A. Following one shift up and one shift to the right, the data has wrapped to the upper-left corner position in Figure 17B. Based on this wrapping capability illustrated in the instant application, the data illustrated in Figure 1 of Hanounik is actually made up of eight diagonals each containing eight elements. To further clarify, the eight diagonals of Figure 1 of Hanounik are:

Diagonal #1	11, 82, 73, 64, 55, 46, 37, 28
Diagonal #2	21, 12, 83, 74, 65, 56, 47, 38
Diagonal #3	31, 22, 13, 84, 75, 66, 57, 48
Diagonal #4	41, 32, 23, 14, 85, 76, 67, 58
Diagonal #5	51, 42, 33, 24, 15, 86, 77, 68
Diagonal #6	61, 52, 43, 34, 25, 16, 87, 78
Diagonal #7	71, 62, 53, 44, 35, 26, 17, 88

Diagonal #8 81, 72, 63, 54, 45, 36, 27, 18

When the diagonals are viewed in that manner, it is clear that Figure 1 of Hanounik cannot anticipate claims 1, 11, and 26 of the instant application because the processing elements in each diagonal do not receive the data held by every other processing element in that diagonal as required by the claim language. If that were the case, the elements in diagonal #2, which the examiner uses as an example, would need to receive the data held by all the elements in diagonal #2, i.e., 21, 12, 83, 74, 65, 56, 47, 38. As shown by Figure 1 of Hanounik, the processing element holding 21 holds its own data and receives 12 from its neighboring processing element. Thus, the element holding 21 does not receive the data of every other element in its diagonal as recited in claims 1, 11, and 26.

Additionally, even if the examiner's construction of diagonal is used, the method of Figure 1 of Hanounik still does not meet the requirements of claims 1, 11, and 26 that the elements in each diagonal receive the data of every other processing element in the diagonal. Under the examiner's understanding, the array of Figure 1 is made up of fifteen diagonals containing between one and eight elements. In the Office action, the examiner cites the diagonal containing 21 and 12. However, looking for example at the diagonal comprised of 82, 73, 64, 55, 46, 37, and 28, and focusing on the element which originally holds the value 82, it can be seen by the step-by-step progression through Figure 1 that the element that originally holds 82 receives the data 46 in step 1 and 28 in step 2. Because claims 1, 11, and 26 require, for each diagonal, that the elements in the diagonal receive data from every other element in the diagonal, and the method disclosed in Figure 1 of Hanounik clearly does not do that, it is respectfully submitted that independent claims 1, 11, and 26 are not anticipated by Hanounik.

Claims 3 and 13 have been amended to define the terms used in those claims.

In paragraph 13 of the Office action, claims 21-25 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,968,447 to Apisdorf, hereinafter "Apisdorf." The examiner points to Figs. 3, 4A, 4B, and 6 as well as column 13, lines 4-19 and column 14, lines 9-28. In response to the examiner's rejection, claim 21 has been amended.

Newly amended claim 21 now makes clear that data is shifted along diagonals rather than simply among the processing elements. The language added to claim 21 tracks the language

used in claim 1. In addition, amended claim 21 describes that once initialized, the current count at each processing element is either incremented or decremented but not both as is contemplated in Apisdorf.

Applicant at this time has not submitted any arguments in support of the patentability of the dependent claims. It is believed that independent claims 1, 11, 21, and 26 are now in condition for allowance such that all of the dependent claims which depend either directly or indirectly therefrom are also in condition for allowance.

Applicant has made a diligent effort to place the instant application in condition for allowance. Accordingly, a Notice of Allowance for claims 1- 26 is respectfully requested. If the examiner is of the opinion that the instant application is in condition for disposition other than through allowance, the examiner is respectfully requested to contact applicant's attorney.

Respectfully submitted,



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